



UNITED STATES PATENT AND TRADEMARK OFFICE

Yan
UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,474	07/02/2003	Ravindra K. Pandey	25886-0095	4936
20985	7590	02/01/2005	EXAMINER	
FISH & RICHARDSON, PC 12390 EL CAMINO REAL SAN DIEGO, CA 92130-2081			FEDOWITZ, MATTHEW L	
		ART UNIT		PAPER NUMBER
		1623		
DATE MAILED: 02/01/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/613,474	PANDEY ET AL.
	Examiner Matthew L. Fedowitz	Art Unit 1623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on _____.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-8 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
 5) Claim(s) ____ is/are allowed.
 6) Claim(s) 1-8 is/are rejected.
 7) Claim(s) ____ is/are objected to.
 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on ____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date 10/8/03 & 5/24/04

4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.
 5) Notice of Informal Patent Application (PTO-152)
 6) Other: _____

DETAILED ACTION

Claims 1-8 are pending in this action.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 2 and 3 use the term "heating" without identify what temperature or range of temperatures at which the heating is to take place. Claims 5-8 use the term "re-esterifying" and "re-esterified" without providing direction as to where the compounds are "re-esterified" and this could be interpreted to mean esterification any where on the compound. Claim 4 is also rejected as depending from an indefinite claim. Hereinafter, heating will be interpreted to mean any increase in temperature. And "re-esterifying" will be interpreted to mean any ester formation in the process.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-3, 5 and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Brockmann et al.*, *Smith et al.* and *Rungta et al.*

Claims 1-3, 5 and 7-8 are directed to:

1. A process for the preparation of methyl pheophorbide a, comprising treating chlorin e6 trimethyl ester with a base in an aromatic solvent.
2. A process for the preparation of pyropheophorbide a, comprising:
 - (a) treating chlorin e6 trimethyl ester with a base in a high-boiling aromatic solvent to give methyl pheophorbide a; and
 - (b) heating the methyl pheophorbide a to effect decarboxylation and saponification.
3. A process for the preparation of ether analogs of pyropheophorbide a, comprising:
 - (a) treating chlorin e6 trimethyl ester with a base in a high-boiling aromatic solvent to give methyl pheophorbide a;
 - (b) heating of the methyl pheophorbide a to effect decarboxylation and saponification to give pyropheophorbide a; and
 - (c) treating the pyropheophorbide with an acid, followed by an alcohol under basic conditions to effect addition of the alcohol across a vinyl group.

Art Unit: 1623

5. A process for the preparation of purpurin-18, comprising:

- (a) treating chlorin e₆ trimethyl ester with a base in an aromatic solvent in the presence of air to give purpurin-18; and
- (b) re-esterifying the resulting purpurin-18.

7. A process for the preparation of purpurinimides, comprising:

- (a) treating chlorin e₆ trimethyl ester with a base in an aromatic solvent in the presence of air to give purpurin-18;
- (b) re-esterifying the purpurin-18; and
- (c) treating the re-esterified purpurin-18 with a primary amine.

8. A process for the preparation of ether analogs of purpurinimides, comprising:

- (a) treating chlorin e₆ trimethyl ester with a base in an aromatic solvent in the presence of air to give purpurin-18;
- (b) re-esterifying the purpurin-18;
- (c) treating the re-esterified purpurin-18 with a primary amine to give a purpurinimide; and
- (d) treating the resulting purpurinimide with an acid, followed by an alcohol under basic conditions.

As relating to claims 1-3, Brockman *et al.* teach a process for making compounds 19, 20 and 23 (see p. 2134) that is similar to methyl pheophorbide a, pyropheophorbide a and ether analogs of pyropheophorbide a. These compounds are made with analogs of chlorine e6 trimethyl ester found on p. 2134 in compounds 8 and 9 where there are negligible differences when compared to the chlorine e6 trimethyl ester. The chlorine e6 trimethyl ester analog is treated with a base (pyridine) and an aromatic solvent (toluene) and as in claim 3 treatment with an acid followed by an alcohol (see p. 2135 first paragraph). Brockman *et al.* does not teach heating the base in the aromatic solvent. However, Smith *et al.* does teach the heating step (see p. 2223 first column second full paragraph).

As relating to claims 5 and 7-8, Rungta *et al.* teach a process for making the compounds of claims 5, 7-8 where the starting compound is methyl pheophorbide a. This compound is then treated with a solvent in air (see scheme 1 p. 1464). By starting with the pheophorbide a compound, Rungta *et al.* goes through same process as applicant claims in 5(a) & (b), 7(a) & (b) and 8(a) & (b). Rungta *et al.* does not teach the use of a base and an aromatic solvent. However, Brockman *et al.* does teach a process including this use of these compounds as presented in the discussion above. Rungta *et al.* also does not teach heating in the process. However, Smith *et al.* does as in the discussion above.

The motivation to combine Smith *et al.* and Brockman *et al.* is found in the Smith *et al.* article on p. 2219 first column lines 2-5 where Smith *et al.* discuss that Brockmann *et al.* use a similar synthesis route. By stating that a similar synthetic route was used essentially incorporates into the Smith *et al.* article the understanding that either route can be used as processes that result in the compounds found in the applicant's claims. Further, the motivation to combine Rungta *et al.* with Smith *et al.* and Brockman *et al.* is found in the Rungta *et al.* article where the starting compound, methyl-pheophorbide-a was extracted from the algae *Spirulina pacifica* (see p. 1463 results and discussion). The use of a naturally occurring form of the compound or a synthetic version is interchangeable and therefore one would quite easily use the Smith *et al.* process and Brockmann *et al.* process in combination to yield the methyl-pheophorbide-a as a starting compound.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings above to obtain the processes as claimed in the instant application to determine an efficient synthesis of pyropheophorbide a and its derivatives.

All of the steps in the instant application are taught in the art. By considering all of the prior art cited would lead skilled in the art to have a reasonable expectation of success in combining Brockman *et al.*, Smith *et al.* and Rungta *et al.* to produce the processes claimed.

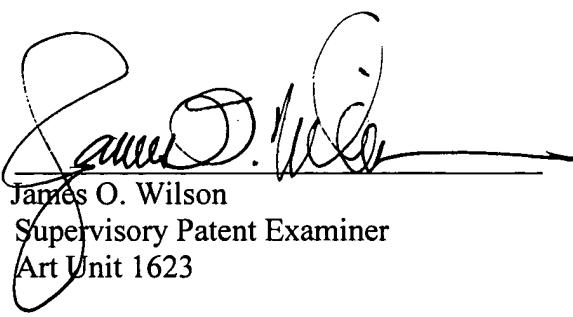
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew L. Fedowitz whose telephone number is (571) 272-3105 and can be reached between 9am-5:30pm (EST) M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's primary, James O. Wilson, can be reached on (571) 272-0661. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Matthew L. Fedowitz, Pharm.D., J.D.
November 9, 2004



James O. Wilson
Supervisory Patent Examiner
Art Unit 1623